VDOE Science Update
August 24, 2016

News

VDOE Summer Update-What we did this summer!

- ✓ Science Standards Review Committees met to make recommendations for revising the 2010 *Science Standards of Learning* and to make suggestions for the subsequent adjustments to the *Science Curriculum Frameworks*.
- ✓ Hundreds of teachers and administrators across the state attended VDOE science professional development opportunities to include the Teachers on the Estuary (TOTE) at the Virginia Institute of Marine Science, the Biotechnology for Educators conference at Virginia Tech, the NABT/BSCS Biology Teacher Academy at Virginia Wesleyan College, the Biology II/Ecology Institute at the New Kent Forestry Center, and the Augmenting Science and Special Educator Teams (ASSET) Academy at James Madison University.
- ✓ Assessment committees met this summer to review data from the previous field questions and to review proposed questions for future assessments.
- ✓ Public hearings were held across the Commonwealth to allow stakeholders to learn more about the upcoming Educatinoal Initiatives to include Profile of a Graduate and the federal Every Student Succeeds Act. Attendees were given the opportunity to ask questions, offer suggestions, and voice concerns about Virginia's proposed response to the ESSA. Additional public comment may be submitted at http://www.doe.virginia.gov/news/educational-initiatives/index.shtml.
- ✓ The Science Instruction page of the VDOE website has been updated to include more safety and environmental literacy resources.

Superintendent's News Release- Students Continue to Improve in Reading, Math and Science

The percentage of students achieving at the proficient or advanced level on the Standards of Learning assessments in reading, mathematics, and science increased by one point statewide during 2015-2016. Eighty- three percent passed grade-level or end-of-course SOL tests in science. To find out more about statewide performance on the 2015-2016 Standards of Learning assessments, please go to http://www.doe.virginia.gov/news/news_releases/2016/08_aug16.shtml .

Science Practice Items in TestNav™ 8

Superintendent's Memo #294-15 informed school division staff that existing Standards of Learning (SOL) practice item sets on the Virginia Department of Education (VDOE) Web site would be made available in the new TestNav™ 8 delivery software. *Introduction to TestNav 8: Multiple Choice/Technology-Enhanced Item Tests*, and a newly posted document, *Introduction to TestNav 8: Writing Tool*, are also available on the VDOE Web site. If you have any questions, please contact the student assessment staff by e-mail at Student_Assessment@doe.virginia.gov or by phone at (804) 225-2102.

Grants and Awards

Chesapeake Bay Restoration Fund Advisory Committee – Restoration and Education Grants Applications due October 1, 2016

Applications will be accepted from private not-for-profit conservation organizations, schools and universities, and governmental agencies whose projects will affect water bodies that are located within the Chesapeake Bay watershed. There is no limit on the amount that an applicant may request. More information on the

Chesapeake Bay Restoration Fund, including the application, W-9 and EDI forms (both new), grant guidelines, and a catalogue of past projects can be found at http://dls.virginia.gov/commissions/cbr/files/PR2017.pdf.

Hands on the Land Mini-Grants
Applications due October 13, 2016
The National Environmental Education Foundation in partnership with Partners in Resource Education just released a request for proposals. Through this RFP, a total of $90,000 in mini-grants will be awarded to sites to support their efforts in delivering place-based environmental education and STEM programing that is aligned with K-12 education standards. Visit the Hands on Land website for more information.

Technology in the Classroom

PyMOL
Educational-use-only PyMOL is a free on-line site designed to allow students or teachers manipulate high quality 3-D molecular structures and to animate molecules dynamically. The resource can be used on the computer or on an I-Pad and be a great visual asset for classroom instruction. Download protein sequences from the RCSB PDB (Protein Data Bank) and allow students to view the complex molecules that proteins can form.

Teacher Opportunities

Scientists into Classrooms
The National Center for Science Education's teacher network is launching an exciting new program to get scientists into classrooms across the country. *Scientists in the Classroom* is a great opportunity to connect students with real-life early career scientists, as well as for teachers to have an expert on board when teaching evolution and climate change. With this program, teachers and scientists collaborate as colleagues, peers, and partners in the scientific enterprise to further science education. For more information on Scientists in the Classroom visit NCSE's website or email Minda Barbeco at Berbeco@ncse.com.

2016 Virginia Association of Science Teachers (VAST) Professional Development Institute (PDI)
The VAST PDI theme is The Faces of Science in Virginia and is designed to build upon last year's PDI theme Designing Inquiring Minds. The Faces of Science showcases the rich Virginia science resources that are available to you through the many science organizations and companies in Virginia. For a full description of the theme and strands, visit http://www.vast.org/presenters.html. The VAST Professional Development Institute will be held from **November 17-19** in Williamsburg, VA.

Environmental Literacy Indicator Tool (ELIT) – Summary and Descriptive Statistics **(PDF)**
The Chesapeake Bay Program's Environmental Literacy Indicator Tool – or ELIT – was distributed to school divisions across Virginia in the summer of 2015. The purpose of the ELIT is to collect important information that will help advance the implementation of environmental education efforts in schools in the mid-Atlantic region. This tool, the data collected, and related efforts supporting environmental education in the region are in direct support of the Environmental Literacy Goal and Outcomes of the 2014 Chesapeake Bay Watershed Agreement.

Governor Terry McAuliffe Announce Publication of The Geology of Virginia
Governor Terry McAuliffe announced the release of *The Geology of Virginia*, the first comprehensive review of Virginia geology in more than a century. The book, published by the Virginia Museum of Natural History, examines the geological history and features of the Commonwealth and offers detailed, regionally specific information. *The Geology of Virginia* is now available for purchase exclusively through the museum's website

at www.vmnh.net and the Museum Store, located in Martinsville. Please visit the museum's website to learn more about the museum's publications, exhibits and programming.

National Park Service Teacher Workshop

Shenandoah National Park will present the 2nd-6th grade Teacher Workshop on Friday, **September 30**, 2016, from 9am-3pm. At this free workshop, teachers will learn how to incorporate the park's 2nd – 6th grade programs into their classroom lesson plans. Park rangers will familiarize teachers with Shenandoah National Park and the program materials, introduce classroom pre-visit and post-visit activities, demonstrate ranger-led activities planned for the students, and define the responsibilities of teachers, rangers, students, and chaperones on field trips. Workshop attendance is required before bringing students on a park program. To register, or for more information, call the Shenandoah National Park Education Office at 540-999-3500, ext. 3489, or email **shen_education@nps.gov.**

Virginia Tech Week of Science!

Please join Virginia Tech for a week of exciting STEM exhibits, presentations, and hands-on activities! The Week of Science starts on Friday, September 30 with a school preview day at the Science Museum of Western Virginia in Roanoke. Saturday, October 1 will be a maker event at the National Capital Region. Sunday, October 2 and Monday, October 3 will be the Southwest Virginia STEM Summit, a teacher professional development and regional economic development event. The Virginia Tech Science Festival will be held in Blacksburg on Saturday, October 8. Program and registration for the STEM Summit: http://www.cpe.vt.edu/swvstem/

Save the date: Natural Connections: Interdisciplinary Strategies for Teaching and Learning

Save the dates for this three-day collaborative conference that provides valuable professional development opportunities to make natural connections in the classroom using interdisciplinary approaches. The workshop, to be held **March 15-17, 2017**, costs $40 per day and is geared towards preK-6th grade educators, administrators, and pre-service teachers. Registration is scheduled to begin mid-January, 2017.

BirdSleuth Curriculum Giveaway end this month!

The BirdSleuth Curriculum is awarding 50 teachers curriculum that is designed to get more kids outside developing STEM skills while engaging with birds and citizen science. Application deadline is **August 31** at 11:59. Apply at **http://svy.mk/28JneUP.**

Student Opportunities

Apply for a GreenWorks! Environmental Education Grant by Sept. 30

Project Learning Tree offers grants up to $1,000 to schools and youth organizations for environmental service-learning projects that link classroom learning to the real world. Students implement an action project they help design to green their school or to improve an aspect of their neighborhood's environment. The projects partner students with their whole school, local businesses and/or community organizations, and provide opportunities for student leadership. For more info, please go to Project Learning Tree.

Inquiry Corner

Inquiry learning allows students to be active participants in their learning. Whether analyzing a discrepant event, designing and conducting a lab, or using digital resources to research a problem, inquiry learning allows learners to have ownership of their learning. There are four different levels of inquiry and each of these allow for the development of skills and are appropriate at different times in the classroom.

Inquiry looks different with different age groups as students develop scientific skills and processes and become more immersed in scientific reasoning. A teacher of a second grade classroom may have to facilitate discussion as to feasible procedures when in circle time, while a secondary teacher may allow teams to develop their own procedures to answer a given problem. As a facilitator in the learning process, the teacher ensures a safe environment that allows students to take control of their own learning.

First Grade (1.1; 1.3)

Condition: Given a designed horizontal workspace, assorted materials (vinegar, milk, baking soda, powered drink mix, sugar salt, sand, soil, rocks, beads, etc),

Behavior:
Students will design and conduct an investigation to determine what substances are soluble in water.

Success Criteria:
As a group, and with the teacher as a facilitator, the students will synthesize an experiment to include:

- a prediction of what will dissolve or mix and what will not;
- determine what observations are needed to determine whether a substance dissolves; and
- a procedure that includes the equipment needed to complete the experiment.

Upon completion of the experiment, the students will

- Communicate their observations using tables and/or charts to display information;
- Classify and arrange the materials based on their ability to dissolve or mix in water; and
- Explain how different common materials interact differently with water and how this impacts them in their daily life.

Articles

What We Call Misconceptions May Be Necessary Stepping-Stones Toward Making Sense of the World-this article emphasizes the importance of examining student misconceptions and correcting them with sense-making activities. The research suggests using activities that engage students in science and engineering practices that will help them develop their understanding of disciplinary core ideas and cross-cutting concepts and, subsequently, the world around them.

Highlighted Superintendent's Memos

- MEMO 197-16
  Announcing the 2017 Children's Engineering Convention
- MEMO 189-16
  Textbook and Instructional Materials Adoption Schedule for History and Social Science, Mathematics, English, and Science
- MEMO 185-16
  Announcement of Conference: Assessing for Deeper Learning: *A Transformative Pathway to Prepare Virginia Students for the Future* (September 26, 2016)
- MEMO 184-16
  2016 Legislation Impacting Home-School Students and Dual Enrollment
- MEMO 176-16
  2016 General Assembly Revisions to the Standards of Quality

Contact Us

As always, please contact one of VDOE Science Team if you have questions.

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